

## CHAPTER 8

### DRAINAGE, HYDROLOGY, AND SURFACE WATER QUALITY

This Chapter of the EIR was drafted to address potential environmental concerns related to the ultimate discharge of storm water and project related water uses into recipient drainages, the incremental change of flow volumes and their effects on existing watershed conditions as well as the waterborne debris (rock, silt, sand, and vegetation debris) that accompanies the downstream movement of water during a rainstorm. The improvements required to accommodate volumes of storm water and associated debris are called flood and sediment control facilities. The baseline documents used in the preparation of this section of the EIR was the Drainage Report and Preliminary Hydrology Report prepared for the La Entrada residential subdivision, the Final Drainage Plan prepared for the Pazar-Shea residential subdivision, and the Calabasas General Plan Environmental Impact Report (1995).

#### 8.1 Existing Conditions

##### *Hydrologic and Drainage Conditions*

The proposed project site is located within the Malibu Creek Watershed. The Malibu Creek drains an area of approximately 109 square miles in the Santa Monica Mountains and the Simi Hills (Santa Monica Bay Restoration Project, 1994). Approximately 66 percent of the Malibu Creek Watershed lies within Los Angeles County, with 33 percent in Ventura County. Malibu Creek flows through steep-sided canyons, with a mushroom shaped tributary system within the Santa Monica Mountains. This tributary system is controlled geologically by uplifted valleys bounded by east-west trending reverse faults. Historically, there is little natural flow within the summer months; much of the natural flow that does occur in the summer comes from springs and seepage areas. The average annual storm runoff from the Malibu Creek Watershed is approximately 13,565 acre-feet (Santa Monica Bay Restoration Project, 1994).

The proposed project development area is situated on moderate to severely sloping terrain (average slopes range from 26-50 percent) adjacent to preserved open space lands managed by the Santa Monica Mountains Conservancy and is approximately 750 feet east of Malibu/Las Virgenes Creek. Although the subject site does not contain any riparian environments, on-site surface runoff currently flows into the existing storm water collection facilities along Las Virgenes Road. These water collection facilities were constructed pursuant to County of Los Angeles Flood Control District and City of Calabasas standards. All runoff captured in these existing facilities is subsequently discharged into Malibu (Las Virgenes) Creek.

### *Regional Water Quality Setting*

The Los Angeles Regional Water Quality Control Board adopted a Water Quality Control Plan, Los Angeles Region: Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties in 1994 for the purposes of preserving and enhancing water quality and protecting designated beneficial uses of all regional waters. The following beneficial uses are directly affected by water quality within Las Virgenes/Malibu Creek:

- Cold Freshwater Habitat;
- Rare, Threatened, and Endangered Species;
- Migration of Aquatic Organisms;
- Spawning, Reproduction, and/or Early Development; and
- Wetland Habitat.

The Basin Plan outlines water quality objectives that are used in conjunction with beneficial uses to act as water quality standards.

Concentrations of the following pollutants are used to determine water quality within Malibu/Las Virgenes Creek:

- Ammonia;
- Bacteria, Coliform;
- Biological Oxygen Demand;
- Exotic Vegetation;
- Floating Material;
- Mineral Quality;
- Nitrogen (Nitrate, Nitrites);
- Oil and Grease;
- Dissolved Oxygen;
- pH;
- Solid, Suspended, or Settleable Materials; and
- Turbidity.

When any of the above listed pollutant sources exceed established concentration levels, the Regional Water Quality Control Board may establish a Total Maximum Daily Load (TMDL) for the impaired water body. These water bodies and their pollutant sources are then included on the

303(d) list of impaired surface waters within the Los Angeles Region. Las Virgenes/Malibu Creek within the City of Calabasas is currently on the 303(d) listing because of high coliform count, nutrients (algae), Organic enrichment/low dissolved oxygen, scum/foam-unnatural, Selenium, and trash (City of Calabasas Master Plan for Restoration, 2003).

#### *Existing Water Quality Programs Within the City of Calabasas*

Storm water Best Management Practices (BMPs) are required of both public and private land developments throughout the City of Calabasas. The goal of BMP implementation is to effectively control pollutants carried by storm water runoff. Title 17, Land Use and Development, Chapter 17.56 and Title 8, Health and Safety, Chapter 8.28 of the Calabasas Municipal Code conditions all new developments to include BMPs as applicable under the Standard Urban Storm water Mitigation Plan. The City's Environmental Services Manager has the primary responsibility for verifying that all storm water management requirements (both during and after construction) are in place.

Chapter 17.26 of the Land Use and Development Code requires a percentage of a property to remain pervious depending on the zoning of a property proposed for development. Thirty (30) percent of pervious area is required for all new parking lots, with runoff either being directed to those pervious surfaces or media filtration to remove oil and grease from storm water flowing over parking lots. Moreover, a project developer must submit proof of ongoing maintenance of media filtration systems prior to the issuance of building permits.

The City has also implemented structural BMPs in certain priority locations around the City. To date, the City has installed 41 catch basin filter inserts and two in-line gross solids removal units in the municipal storm drain system. The City is continuing to seek funding for implementation of additional storm water BMPs designed to reduce pollutant loading to the receiving waters to the maximum extent practicable (City of Calabasas Master Plan for Restoration, 2003).

### **8.2 Significance Thresholds**

Appendix G of the revised *CEQA Guidelines* indicates that a project will normally have a significant effect on water quality if it will:

- Violate any water quality standards or waste discharge requirements;
- Provide substantial additional sources of polluted runoff;

- Substantially alter the existing drainage pattern of the site or area in a manner which would result in substantial on- or off-site erosion;
- Substantially increase the rate or amount of surface runoff in a manner which would result in on- or off-site flooding;
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems;
- Place housing within a 100-year flood hazard area;
- Place structures within a 100-year flood hazard area which would impede or redirect flood flows; and/or
- Expose people or structures to a significant risk of loss, injury or death involving flooding.

Flood hazard impacts related to the proposed project would be considered potentially significant if structures are within the FEMA 100-year flood plain, locally-recognized inundation area, or if the project would cause or contribute to flooding off-site.

Potential impacts on water quality are typically based on nutrient and other contaminant concentrations associated with runoff from a proposed use. Water quality impacts are considered significant if the project would potentially degrade surface or groundwater quality below standards established by the Regional Water Quality Control Board. These standards are usually in accordance with the California EPA's maximum contaminant levels (MCLs) for drinking water or in accordance with Regional Water Quality Control Board TMDL thresholds.

The project's drainage analysis was based on a conceptual design for the conveyance of on and off-site runoff to the existing storm drain inlets along the east side of Las Virgenes Road. Existing runoff discharge quantities were taken from studies conducted for the project and surrounding areas. Anticipated peak runoff rates reflecting undeveloped and developed site conditions were calculated using the Los Angeles County Department of Public Works Hydrology Manual. Natural peak flows were calculated using a 10-year frequency storm and the appropriate burning and bulking factors were utilized in the calculations for this undeveloped property.

### 8.3 Impacts

#### Issue 1: Changes to Drainage Patterns and Storm Flow Volumes

The basic objective of preventing any net increase in off-site runoff due to the conversion of land from a non-developed to developed condition can be achieved through the design of detention facilities that can reduce the net peak flow discharge from the site to levels of insignificance (i.e.

no net change in runoff during peak storm events). Because portions of the undeveloped, or permeable portions of the parcel will be converted to impermeable surfaces, changes in absorption rates, and increases in overland flow velocity and volume will occur. For example, a measurable increase in non-pervious surface area will decrease soil absorption and increase overland flow velocity and volume. The total area proposed for conversion from a natural condition to hardscape will increase in runoff volumes. This impact on downstream hydrology is considered potentially significant. Therefore, the applicant has designed a system of on-site debris and detention basins for the purposes of eliminating any net increase in off-site runoff volumes (i.e. the volume of water entering the City's storm drain system and ultimately entering Las Virgenes/Malibu Creek). These systems should reduce hydrologic impacts to Las Virgenes Creek to less than significant levels.

Based on the drainage studies on file with the City's Public Works Department, potentially significant drainage and storm flow impacts can be avoided through construction of the proposed storm water control facilities. However, inadequate design or improper construction of these proposed improvements would result in potentially significant and unavoidable impacts to downstream resources within Malibu/Las Virgenes Creek. Therefore, mitigation measures have been included that require the design of adequate stormwater detention, collection and conveyance facilities.

With respect to flood hazards, the project is not within an area designated as a flood hazard zone. The City's principal flood prevention design criterion is that all proposed finished floor elevations must be located a minimum of one foot above the 100-year flood water surface elevation. The project complies with this requirement. However, the project's potential affect on downstream flooding would be considered significant if the project drainage plan does not meet the flood control standards established by the City of Calabasas and/or the County of Los Angeles Flood Control District. The flood control facilities proposed as part of this residential project are designed to eliminate increases in flooding potential. Therefore, impacts are considered less than significant with incorporation of mitigation measures.

#### Issue 2: Debris Production and Transport (Sedimentation Related Impacts)

The construction of the proposed residential subdivision will replace approximately 117,000 square feet (2.7 acres) of undisturbed land within the development parcel with impermeable surfaces. The relatively small percentage of the parcel area (approximately 13 percent of the subject site) proposed for conversion to non-pervious surfaces will not result in significant increases in on-site erosion or sedimentation, except possibly during the brief period of time

between completion of finish grading, installation of hardscape and permeable pavement materials, and establishment of a landscape plant community. Requiring the applicant to comply with the City's standard wet weather erosion control requirements will effectively reduce all temporary construction related water quality effects to less than significant levels.

The use of appropriate Best Management Practices to intercept sediments suspended in storm water discharge and parking lot related oil and gas residues should prevent significant downstream chemical and dissolved/suspended solid contamination in the drainages into which storm flow will be discharged. As long as onsite drainage is appropriately captured, treated and disposed of, the potential for changing stream-flow volumes, significantly increasing chemical concentrations or impacting downstream riparian areas is remote. The impacts related to surface water flow, dispersion, runoff, and related effects were determined to be potentially significant and therefore mitigation measures have been developed. Please refer to Section 8.4 of this document for a full discussion of water quality mitigation measures.

### Issue 3: Impacts to Surface and Groundwater Quality

In addition to construction related increases in sedimentation, metals, nutrients, detergents, soil additives, pesticides, fertilizers, and other miscellaneous operational wastes could also enter the storm drain system during a storm event and result in significant "downstream" surface and subsurface water quality impacts. After construction, potential sources of pollutants from day to day residential activities (i.e., car washing, automobile maintenance, landscape fertilization, etc.) can include detergents, volatile organic compounds, fertilizers, oil, paint, etc., particularly if the materials involved are carelessly used, stored, and disposed of. These pollutants can potentially be carried in rain and/or irrigation runoff into Malibu/Las Virgenes Creek and result in significant surface water quality impacts.

Groundwater impacts can also result from the transport of chemicals within a fluvial system. Although the level of contamination is control by a variety of complex environmental factors (such as varying soil chemistry, groundwater and surface water systems, and significant biological activity) significant groundwater impacts can result from relatively small pollutant concentrations, especially in already impaired waterbodies. To ensure that potential post-development surface and ground water quality impacts do not result from long-term project operation, Regional Water Quality Control Board endorsed Best Management Practices (BMPs) will be implemented that include, but are not limited to, permanent landscaping on manufactured slopes, installation of storm-drains incorporating bio-filtration inserts, and permeable vehicle parking areas. The specific and appropriate BMPs for the proposed residential development would be determined (and approved by the City) when final grading plans are prepared (to finalize all BMPs at this

level of planning would be premature.) With implementation of these BMPs, project-related surface and sub-surface water quality impacts would be less than significant.

#### Issue 4: Cumulative Impacts

Given that the Regional Water Quality Control Board lists Malibu/Las Virgenes Creek as an "impaired" water body, relatively small increases in erosion, chemical contamination and sedimentation should be considered cumulatively significant. However, there are limited development opportunities within the Las Virgenes Valley that could significantly impact water surface and/or subsurface water quality, especially since the recent purchase of Ahmanson Ranch for permanent open space. The continued implementation of water quality Best Management Practices in both commercial and residential development, the implementation of riparian restoration as described in the Las Virgenes Master Plan for Restoration, and limited development within the Las Virgenes Valley will not significantly contribute to cumulative erosion, chemical loading or sedimentation impacts in local drainages or nearby groundwater basins. The project's degree of contribution to cumulative water quality impacts is considered less than significant as long as all existing, proposed and future development is required to comply with local, state and federal water quality standards (a Class III impact).

## 8.4 Mitigation Measures

### Issue 1: Change to Drainage Patterns and Storm Flow Volumes

To mitigate potential impacts related to changes in drainage patterns and storm water flow volumes, the following mitigation measure is required:

- (1) A Drainage and Flood Control Improvement Plan shall be prepared by the project applicant. This Improvement plan shall identify all required construction related and permanent drainage and flood control improvements necessary to comply with the City's standard of "no net increase" in storm flow discharge volumes into Las Virgenes Creek. This plan shall be prepared in consultation with the City Engineer and the Los Angeles County Flood Control District to facilitate required interagency coordination. The capacity, location, and size of all culverts, collection devices, energy dissipaters, detention basins, debris basins and related improvements shall be designed to the satisfaction of the City Engineer and Los Angeles County Flood Control District. All necessary permits required to implement the Improvement Plan shall be obtained from the County Flood Control District prior to City issuance of a permit for mass grading. No grading permits shall be issued until the Drainage Plan is approved and construction related improvements are in place.

**Residual Effects:** Not significant

### Issue 2: Debris Production and Transport

To mitigate impacts related to debris production and transport, the following mitigation measures are required:

- (2) Sedimentation yields associated with project boundaries shall be computed for pre-development and post-development conditions in accord with methods approved by the Los Angeles County Flood Control District and Los Angeles Regional Water Quality Control Board. These estimates of sediment yield shall be approved by the City Engineer prior to initiating final design of the on-site erosion control and flood-control facilities. The erosion control facilities shall be design to maximize sediment capture, to the extent practicable.
- (3) The project civil engineer shall prepare and implement a comprehensive Erosion and Sediment Control Plan to address construction and long-term operational effects on downstream riparian environments. This plan shall be prepared by a qualified Civil



Engineer and/or Soil Conservationist. Proposed management efforts may include (but not be limited to) provisions for the use of vegetative filtering, appropriate use of temporary debris basins, silt fences, sediment traps and other erosion control practices. The proposed plan shall also address all relevant NPDES requirements and recommendations for the use of best available technology. The erosion control plan shall be reviewed and approved by the City Engineer prior to issuance of grading permits.

- (4) Temporary erosion control measures shall be used during the construction process to minimize water quality effects. Specific measures shall be identified in the approved Erosion and Sediment Control Plan. The following water quality assurance techniques shall be included as required by the City's Environmental Services Program Manager:

- Minimize removal of existing vegetation.
- Provide temporary soil cover, such as hydro seeding, mulch/binder and erosion control blankets, to protect exposed soil from wind and rain.
- Incorporate silt fencing, berms, and dikes to protect storm drain inlets and drainage courses.
- Rough grade contours to reduce flow concentrations and velocities.
- Divert runoff from graded areas, using straw bale, earth, and sandbag dikes.
- Phase grading to minimize soil exposure during the October through April storm period.
- Install sediment traps or basins.
- Maintain and monitor erosion/sediment controls.

**Residual Effects:** Not significant

### Issue 3: Impacts to Surface and Groundwater Quality Impacts

- (5) To minimize the surface and ground water effects of construction related erosion and operational sources associated with occupancy of the proposed residential subdivision, the following design features shall be incorporated into the project grading plan to the degree determined necessary by the project civil engineer. The City Engineer shall review and approve the grading plan to verify compliance with water quality enhancement features including, but not limited to:

- drainage swales, subsurface drains, slope drains, storm drain inlet/outlet protection, and sediment traps;
- check dams to reduce flow velocities;
- permanent vegetation, including grass-lined swales;
- design of appropriately sized detention basins and storm drain outlets to reduce scour;
- incorporate pervious surface areas consistent with the City of Calabasas pervious surface requirements

(6) The project applicant shall prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) subject to review and approval by the City of Calabasas. The management regime recommended in this Plan shall be the governing document for the long term maintenance of water quality features included in the project (e.g., first flush basins, detention basins and other facilities). The applicant shall monitor adherence to the plans and management guidelines contained in the Plan. The Plan should require periodic analysis of the nutrients/chemicals in the discharged water and the nutrient and moisture requirements of the grass and other landscaping within any turf areas in excess of two acres.

(7) Runoff from developed areas shall be diverted to detention basins, or underground oil and grease traps or other Best Management Practices, as deemed acceptable by the City Engineer. A registered civil engineer shall design these devices as part of the drainage improvement plans for the project. The basins and traps would require periodic maintenance by the property owner, or other responsible entities. Perpetual facilities maintenance provisions for all best management practices shall be included in SWPPP. Maintenance responsibilities shall be established prior to issuance of a Certificate of Occupancy for the first residential unit.

**Residual Effects:** Not significant

#### Issue 4: Cumulative Impacts

The degree of project contribution to cumulative impacts is considered incremental but not significant (Class III). Therefore, no mitigation is required.

**Residual Effects:** Not significant

## **8.5 References**

City of Calabasas, September 1995, General Plan Environmental Impact Report, Calabasas, California 91302.

EDAW, Inc., September 2003, Las Virgenes, McCoy and Dry Canyon Creeks Master Plan for Restoration, Calabasas, California 91302.

Santa Monica Bay Restoration Project, November 1994, Review of Monitoring and Response Protocol for the Malibu Creek Watershed.

The Haaland Group, Inc., Drainage Report and Preliminary Hydrology Report, Calabasas, CA 91302.